

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 June 2004 (03.06.2004)

PCT

(10) International Publication Number
WO 2004/045492 A3

(51) International Patent Classification⁷: **A61K 31/40**

(21) International Application Number:
PCT/IL2003/000973

(22) International Filing Date:
17 November 2003 (17.11.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
152900 17 November 2002 (17.11.2002) IL

(71) Applicant (*for all designated States except US*): **YEDA RESEARCH AND DEVELOPMENT CO. LTD.** [IL/IL]; Weizmann Institute of Science, P.O. Box 95, 76100 Rehovot (IL).

(71) Applicants and

(72) Inventors: **SCHERZ, Avigdor** [IL/IL]; 4 Tor Ha'aviv Street, Neve Amit, 76329 Rehovot (IL). **BRANDIS, Alexander** [IL/IL]; 9/3 Ahad Ha'am Street, 76261 Rehovot (IL). **MAZOR, Ohad** [IL/IL]; 3, Haela Street, Ganei Yaar, 71531 Lod (IL). **SALOMON, Yoram** [IL/IL]; 43B Gordon Street, 76287 Rehovot (IL). **SCHEER, Hugo** [DE/DE]; 3 Orststrasse, 87662 Blonhofen (DE).

(74) Agent: **BEN-AMI, Paulina**; Ben-Ami & Associates, P.O. Box 94, 76100 Rehovot (IL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
8 July 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **WATER-SOLUBLE ANIONIC BACTERIOCHLOROPHYLL DERIVATIVES AND THEIR USES**

(57) Abstract: The invention provides anionic water-soluble tetracyclic and pentacyclic bacteriochlorophyll derivatives (Bchls) containing at least one, preferably two or three, negatively charged groups and/or acidic groups that are converted to negatively charged groups at the physiological pH, preferably Bchls having a group COO⁻, COS⁻, SO₃⁻, PO₃²⁻, COOH, COSH, SO₃H, and/or PO₃H₂ bound through an ester or amide bond to one or more of the positions 17³, 13³, and 3² of the tetracyclic or pentacyclic Bchl molecule, for photodynamic therapy and diagnosis.

WO 2004/045492 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL03/00973

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 31/40
US CL : 514/427, 410, 426

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 514/427, 410, 426

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
CAPLUS, USPATFULL, PCTFULL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,147,195 A (SCHERZ et al.) 14 November 2000 (14.11.2000), abstract, Figures 1-5, column 1 lines 11-17, column 3-4, Examples at column 12-26, claims 1-9.	1-50
X	US 5,955,585 A (SCHERZ et al.) 21 September 1999 (21.09.1999), abstract, Figures 1-5, column 1 lines 11-17, column 3-4, Examples at column 9-19, claims 1-19.	1-50

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:		"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

20 March 2004 (20.03.2004)

Date of mailing of the international search report

20 MAY 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

Green Padmanabhan

Telephone No. 571/272-1600